DOCUMENT RESUME

ED 260 680 HE 018 809

AUTHOR	Elman, Sandra E.; Lynton, Ernest A.
TITLE	Assessment in Professional Education.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	Oct 85
NOTE	24p.; Paper presented at the National Conference on Assessment in Higher Education, sponsored by the American Association for Higher Education, (Columbia, SC, October 13-15, 1985). Broken print will affect legibility.
PUB TYPE	Viewpoints (120) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Business Administration Education; Case Studies; Clinical Experience; Competence; *Critical Thinking; Engineering Education; Experiential Learning; Group Discussion; Higher Education; Medical Education; *Outcomes of Education; *Problem Solving; *Professional Education; Role Playing; *Self Evaluation (Individuals); Simulation; *Student Evaluation

ABSTRACT

The assessment of professional programs at the undergraduate level is discussed (i.e., engineering, business, education, nursing, and other career-oriented fields). Presently, assessment in professional education relies almost exclusively on written or oral testing of a predetermined set of cognitive and analytical skills. This is followed by assessment of the ability to apply these skills to predetermined and well-defined problems and cases. Professional education and assessment need to focus more on the process of defining problems and making instrumental judgments, using a variety of real and simulated clinical experiences. Professionals need to be able to make choices among a number of possibilities, each of which optimizes one or more competing values. Professional competence requires dealing with complexity, tolerance for ambiguity, coping with discontinuity and disequilibrium, and risk-taking. Self-assessment is emerging as an integral part of professional competence, and, therefore, must become part of professional education. The effective use of the following methods in assessment are addressed: the case study method; simulation, role playing, and group discussion; and small group interactions. Specific reference is made to the education of engineers, managers, and medical personnel. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED260680

BEST COPY AVAILABLE

Assessment in Professional Education

by
Sandra E. Elman and Ernest A. Lynton
John McCormack Institute of Public Affairs
University of Massachusetts at Boston

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

HE018 807

Prepared for the American Association for Higher Education under contract to the National Institute of Education for the National Conference on Assessment in Higher Education at the University of South Carolina, Columbia, South Carolina, October 13-15, 1985.

ASSESSMENT IN PROFESSIONAL EDUCATION

Sandra E. Elman and Ernest A. Lynton
John McCormack Institute of Public Affairs
University of Massachusetts at Boston

ABSTRACT

Current discussion of assessment in undergraduate education must pay greater attention to professional programs. Two thirds of all undergraduates are enrolled in curricula in engineering, business, education, nursing and many career oriented fields. To date, there is little evidence of any serious analysis of the status quo of assessment of professional education or of explorations of possible alternatives.

At this time, assessment in professional education relies almost exclusively on written or oral testing of a predetermined set of cognitive and analytical skills. This is consistent with the traditional view that professional activity consists of finding the unique solution of a well defined problem by means of these skills. We are beginning to recognize that this approach is no longer adequate to the complexity of modern society. Professional education and assessment must focus more on the process of defining problems and making instrumental judgments, using a variety of real and simulated clinical experiences. Furthermore, self-assessment is emerging as an integral part of professional competence and hence must become part of professional education.

The paper will discuss the role of assessment in professional education and provide some suggestions for enhancing its utility for professional practice.

The Status Quo

1985 has been a year of introspection for American higher education. Two widely publicized reports reflect the concerns of national policymakers as well as educators with what our colleges and universities are doing in general undergraduate education, and how well they are doing it. That this has triggered a renewed interest in assessment is understandable and indeed appropriate. However, the current

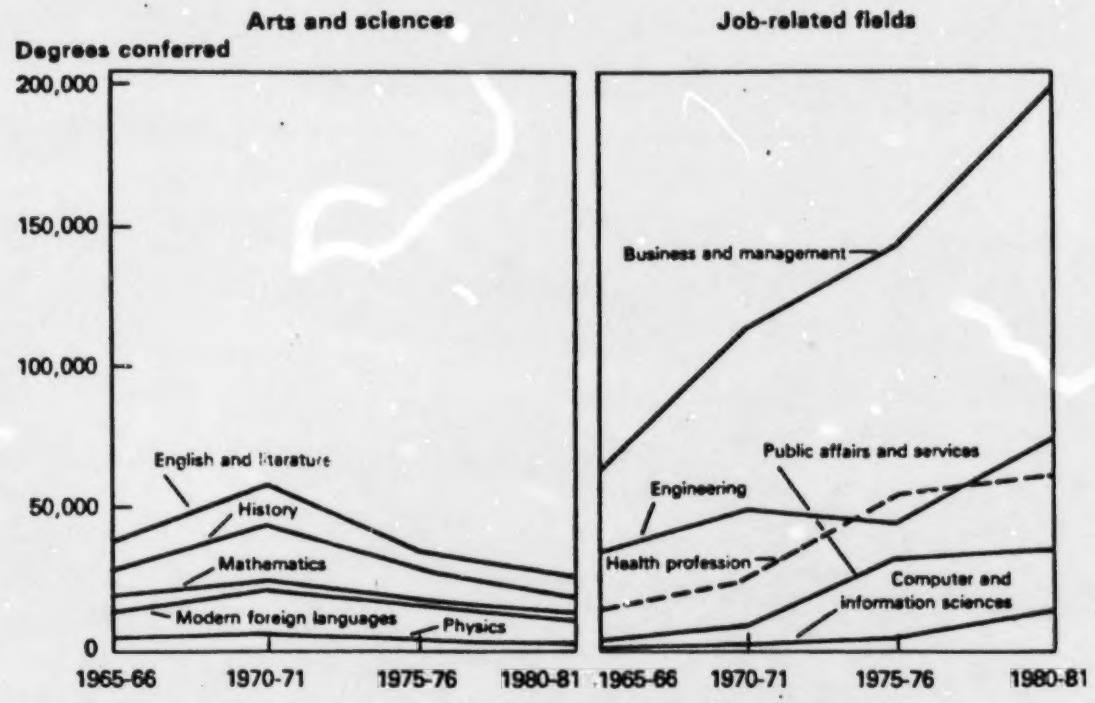
discussion has focussed almost exclusively on assessment in liberal arts programs. That is not sufficient. Any serious examination of assessment in higher education must include a critical look at the degree programs which are intended to prepare undergraduates for specific careers. To ignore that component of higher education is to ignore the fact that over the last fifteen years there has been a phenomenal increase in the number of bachelor's degrees conferred in professional fields. Indeed, as the Figure on the next page indicates business and engineering, together with their related areas, account for almost one third of all baccalaurate degrees. Other career oriented degrees, including those in education, make up another third. Analyses of the role of assessment in undergraduate education must therefore pay a good deal of attention to the career oriented programs in our professional schools and departments.

For the most part, assessment is perceived differently in the liberal arts than in professional fields. While Alverno may not have many counterparts either among other liberal arts institutions or within comprehensive universities, the fact remains that assessment seems to have gained far more salience within the liberal arts than in the professional fields. In preparing this paper we interviewed several deans and faculty members in various professional schools around the country. There was unanimity among them with respect to one particular issue:assessment warrants more attention--and different modes and methods need to be implemented. When asked why institutions have been slow to respond if the need is recognized, deans mention that

(1)<u>they</u> are not sure what new assessment mechanisms are appropriate;

(2) even if they knew, they would be reluctant to insist on implementing what is likely to be a time consuming procedure which would increase the workload of an already

Figure 9.- . Bachelor's degrees conferred in selected fields: United States, 1965-66 to 1980-81



SOURCE: U.S. Department of Education, National Center for Education Statistics, surveys of *Earned Degrees Conferred.*

"overburdened faculty", and

(3) the faculty generally does not share their concern.

The prevailing satisfaction among most faculty - and some administrators - with the status quo is due in part to a feeling that assessment techniques per se do not really make much difference in judging student progress and performance. They view the quality of the faculty who teach and who ultimately gain a sense of their students' achievement as the critical determinant. In addition, faculty can point to the fact that a good deal of assessment actually exists. It is assessment of the most traditional kind: written course and comprehensive examinations which test the students' grasp of basic principles and of pertinent facts. Such exams tend to be used even in clinical courses. A typical example is how the area of Negotiation is treated in the majority of business programs. Many of them include it, usually with one or more opportunities for active student involvement in simulated negotiating sessions. In many institutions these are videotaped which provides a useful source of self-assessment. But when it comes to assigning a grade to the student for the course in Negotiation, most instructors rely on conventional testing of textbook material. Much the same situation exists in similar areas such as patient interviewing and diagnosis in medical education, moot court examination and cross examination in legal education.

What emerges then is a situation where exploration of new models of assessment is relegated to the bottom of the policy agenda either because of higher priority issues or a lack of readily available and functional modes of assessment which both faculty and administrators consider useful. The predominance of theory-and-data testing is entirely consistent with the traditional positivist approach to professional education and to a large extent serves as a disincentive for creative innovations. The relevance of that

traditional approach must be reviewed before any real progress takes place regarding assessment in professional programs. We begin, therefore, with a brief look at the current approach to professional education.

The Prevalent Approach to Professional Education

Professions have traditionally defined themselves by claiming the existence of a basic body of specialized knowledge and methodologies which, if properly applied, provide the solutions to well defined and recurrent problems. According to this view, there are three components to professional knowledge:

> (1) An underlying discipline or basic science component upon which the practice rests or from which it is developed
> (2) An applied science or "engineering" component from which many of the day-to-day diagnostic procedures and problem situations are derived
> (3) A skills and attitudinal component that concerns the actual performance of services to the client, using the underlying basic and applied knowledge.

Seventy-five years ago Abraham Flexner translated this into a curricular framework for medical education which gradually became the established model for all professions. The curriculum begins with a study of the appropriate basic sciences, followed by their applications. Supervised clinical practice, real or simulated, occurs at the end of the program. The rule is simple: first the basic and applied sciences, then the skills of application to real-world problems of practice. Essentially, this is the basic positivist approach, an expression of what Donald Schon, in his recent book The Reflective Practitioner, calls the belief in Technical Rationality which dominated epistemology for a long time.

With this traditional approach to professional education, "assessment" of aptitude, progress and achievement tends to

follow the same mode. If one believes that to every problem there is a specified beginning and a specified end, and a specific scientific body of knowledge is needed to go from one to the other, the evaluation of students will inevitably focus on the students' proficiency in that body of knowledge. What is tested and evaluated are, in first instance, cognitive and analytical skills in the basic and applied sciences. This is followed by assessment of the ability to apply these skills to predetermined and well defined problems and cases. The emphasis always is on problem- solving, with little or no attention to problem-setting. Furthermore, the belief that every problem has a unique solution leads to an emphasis on testing the outcomes, rather than the process of arriving at these. Little attention is paid to the judgmental and discretionary abilities of the students.

Criticisms of Professional Education

1985 has also been a year of rising criticism of professional education. To date, the current reviews of professional education have focused much more on what capabilities are to be taught than on how to assess them. Questions as to desired outcomes are being pursued independently and without any apparent coordination by such organizations as the American Association of Medical Colleges (AAMC), which issued a major report on medical education last year, and the American Assembly of Collegiate Schools of Business (AACSB), which is in the midst of a review of business curricula at this time. In spite of the lack of any systematic communication between the several reviews, they appear to have a great deal in common with regard to the suggested direction in which change ought to take place. What emerges is a shared, growing, recognition that effective professional practice in a broad range of

fields requires considerably more than purely cognitive and analytical skills and that means for helping students to acquire competencies need to be integrated into the professional curricula.

At one level much of the current criticism echoes complaints dating back several decades. In 1968 Jencks and Riesman, in The Academic Revolution, pointed out the divergence between professional preparation and professional practice, and in 1972 Schein, in his report on Professional Education in the Carnegie Commission series, called for the inclusion of more behavioral components in professional preparation. They and others made various suggestions for relating theory more closely to practice, particularly by making more extensive and more effective use of real as well as simulated clinical experiences.

In a number of human service programs as well as in a few business and management curricula, behaviorial and other non-cognitive elements have been incorporated. On the whole, however, change in this area has been slow and limited except at a few innovative institutions such as Alverno College, the College of Public and Community Service of the University of Massachusetts at Boston, and the College of Human Services in New York. The failure of most colleges and universities to move in this direction is one of the principal reasons for the widespread discontent with higher education among employers reported in Lynton's book The Missing Connection Between Business and the Universities. It has led to a strong focus on non-cognitive areas in corporate education, and a concomitant corporate emphasis on assessment of the pertinent skills.

Many employers use instructors, materials and tests provided by external firms in what has come to be called the "training industry". One of the leading providers of such

services is the American Management Association (AMA) which can furnish an entire range of developmental activities from an afternoon workshop to a full fledged masters' degree program. The latter, which is currently under consideration for degree authority by the New York Board of Regents, is a competency based program based on the perceived attributes of a successful manager. It builds upon the concept of "job competence assessment", based on the fundamental precept enunciated by George Klemp in his book Job Competence Assessment: **"the best way to find out what it takes to do a job is to analyze the job's outstanding performers and then to study what they do that makes them effective."**

Whether this is indeed the best approach to defining and assessing competence in non-cognitive and behavioral areas is debatable. There is a tendency to isolate into separate components what constitutes the total, integrated personality and capability of the "successful manager". The approach appears to overlook that acquiring these individual competencies one by one does not necessarily result in a whole which is equal to the sum of its parts.

A New Conception of Professional Practice

Uncertainty about method notwithstanding, the need to add non-cognitive and behavioral components to most professional curricula is clear. This alone, however, is not enough to prepare a professional to function in the contemporary world. A growing number of critics question the fundamental premises of what constitutes effective professional practice. They argue that professional competence requires something more complex than straightforward application of a set of basic scientific and methodological principles to a well defined and recurrent problem which has a unique solution. Professionals - manager, engineer, physician,

human service specialist - must be able to apply critical judgment. They must be able to make choices not among one correct and many wrong "solutions", but rather among a number of possibilities each of which optimizes one or more competing values. "Instrumental judgment," as Sir Geoffrey Vickers points out in The Art of Judgment, "is the ability to perceive possible courses of action in a given situation." One of the fundamental objectives of a college education is to instill individuals with a capacity to make sound judgments --"judgments of fact" as well as "judgments of value."

Competence involves the ability to understand the complexity of a problem or task and make appropriate decisions. An individual's potential productivity and effectiveness is determined by how well he or she is able to use acquired knowledge in a concrete situation. Competence, therefore, unlike knowledge, involves the application of experience and values. Competence is the ability to deal with cognitive problems "at a detailed and hence relevant level." (Parsons and Platt, p. 77). Hence, competence includes the ability to relate knowledge to the situation and the context to which it is being applied.

Competence, of course, cannot exist without knowledge. The newly emerging conception of professional effectiveness in no sense lessens the need for professionals to master the basic cognitive and analytical skills pertinent to the profession. These are necessary - but they are not sufficient. A direct correlation exists between the nature and scope of professional preparation required and an individual's prospective position. Two year vocational programs which prepare students for relatively low entry level positions in business or technical areas should continue to focus primarily on traditional skill areas. But as the level of responsibility and decision making

increases, so too does the need to go beyond basic cognitive and analytical training: professional development takes on an expanded meaning. The realities of contemporary society have placed new demands on the professional.

In addition, professionals must learn to cope effectively with unpredictable changes both in job content and in job categories as a result of technological developments. At a recent Wingspread Conference, Marc Tucker spoke of the growing need for people

> "who can shift rapidly between jobs requiring very different sorts of skills...[and who] require the sort of education...that produces enough understanding of a wide enough range of phenomena to make it possible to learn new concepts quickly."

As the condition of society changes, the criteria for determining professional competence must be altered as well. Competence now requires dealing with complexity, tolerance for ambiguity, coping with discontinuity and disequilibrium, risk assessment and risk taking, and striking a balance between competing values. These requirements intensify the need for breadth and for perspective. They shift the emphasis in professional practice from solving problems to defining them, <u>from answering questions to deciding which is the right question to ask</u>. More than ever competence trancends knowledge.

Engineering education is one of the areas in which this has to happen. The complexities of modern society and technological advances are not only posing unprecedented cognitive challenges, but have led engineering educators to recognize that competence extends beyond scientific and technical skills. Increasingly the ramifications and implications of engineers' decisions have far reaching consequences, many of which may be uncertain. Instead of being able to make decisions which encompass a definitive set of probable outcomes , engineers must now learn to cope with a much reduced level of predictability. As technical

experts they may be able to forecast the technical and structural effects of pursuing a particular project with some degree of accuracy, but that may be all. In other words, first-order effects may be identified, but the second- and third-order consequences which may affect individuals or the environment cannot be fully determined. In the past, these higher order consequences were largely ignored and only technical aspects were considered. Engineering practice focused on unique solutions for well defined problems, an attitude expressed in its extreme form by the individual quoted by Loren Baritz in Backfire: "If it doesn't have a solution it isn't a problem."

But that point of view is fading. Engineering educators are beginning to realize that these less tangible factors must be seriously deliberated prior to taking certain courses of action. Furthermore, engineers must be trained to think about potential outcomes and need to develop a mind set which allows for a fusion of technical and other factors, including ethical considerations. It is not enough for engineering students to master technical skills, they need to develop technical judgment. Methods of analysis need to be supplemented by methods of synthesis.

For managers, as well, competence requires considerably more than mastery of a number of technical skills. For one thing, it is increasingly important that even lower level supervisors and managers acquire a better understanding of the context in which they function, and learn to assess the second- and third-order effects of decision outcomes. The need for such awareness is increasing in light of the current trend toward a less hierarchical, "flatter" organizational style in which there is more delegation of authority and more shared decision making. In 1981, a survey conducted by the prestigious Conference Board revealed a high level of consensus among corporate leadership regarding

managerial competence. A large majority of respondents concurred that managers should have

> + An awareness that events in the business environment significantly affect company interests, and alertness to particular threats and opportunities;
> + Sensitivy to how company decisions will affect, and be perceived, by others;
> + Attentiveness to the opinions, values and interests of others;
> + An ability systematically to monitor and analyze the business environment and integrate the data developed into strategic planning processes."

Managerial competence has additional dimensions. Peters and Waterman, Reich, Hayes and Abernathy and most recently Piore and Sabel are among many recent authors who stress the importance of the ability to adapt one's management style. These experts blame much of America's decline in international competitiveness in some fields on an adherence to the traditional, rigid principles of "scientific management". Their proposed remedies differ in some respects, but there is a common thread: they all call for a management style which is more intuitive and more flexible, which tolerates ambiguity and which accepts "messiness". In The Next American Frontier Reich, for example, advocates the substitution of what he calls a "flexible-system" model of production for the outdated, single product one. He states that:

> "Flexible systems can adapt quickly only if information is widely shared within them. There is no hierarchy of problem solving, solutions may come from anyone, anywhere. In flexible-system enterprises, nearly everyone in the production process is responsible for recognizing problems and finding solutions."

Hayes and Abernathy's article "Managing Our Way to Economic Decline" in the Harvard Business Review stresses the need for "insight into the subtleties and complexities of strategic decisions", and in The Search for Excellence, Peters and Waterman call for the ability "to manage paradox and ambiguity".

It is quite evident that the traditional management skills, with their heavy emphasis on quantitative analysis, are no longer adequate. This view is shared by a diverse group of critics. A 1983 article in Business Week stated:

> "For two decades, the job market placed a premium on market researchers, planners and financial experts whose knowledge was largely confined to analysis, theory and number manipulation. No longer. Now companies demand managers who contribute to the bottom line and who possess the skills needed for the increasingly complex job of running a business."

In The Reflective Practitioner, Schon quotes Roger Ackoff, one of the founders of operations research, as writing that "the future of operations research is past" and that

> "managers are not confronted with problems that are independent of each other, but with dynamic situations that consist of complex systems of changing problems that interact with each other. I call such situations messes. Problems are abstractions extracted from messes by analysis, they ae to messes as atoms are to tables and charts...Managers do not solve problems: they manage messes."

To focus on the process rather than merely on the outcome of professional practice has become essential. Effectiveness in an independent profession or on a job requires a number of skills and bodies of knowledge that are cognitive and analytical as well as behavioral and affective. These must be learned and absorbed by students. Assessment of each of these competencies should take place in the early stages of professional education. However, dealing effectively with what Ackoff describes requires a synthesis of a great many of these separate components. Competence depends on an individual's ability to put the pieces together and apply in practice the whole of what has been learned. Assessment in professional education, therefore, needs to focus strongly on those synthesizing components of the curriculum in which students are involved in real or in simulated experiences

during which they are expected to integrate all the separate skills they have acquired.

Adaptation and Implementation

Almost all professional curricula incorporate real or simulated clinical experiences - case studies, moot court, internships, and the like. In traditional programs these occur, according to the Flexner formula described earlier, as the third and final element of professional education. A growing number of innovative programs in many different fields are incorporating practical experiences at a much earlier stage. But as yet little progress has been made with regard to the assessment of student performance in these curricular components.

Several alternatives and effective assessment mechanisms may be more readily available and simpler to implement than most educators may realize. There is no need for drastic change if existing modes of instruction and assessment are used with greater flexibility and adaptability on the part of faculty and administrators. For instance, with some creativity and initiative the case study method -- a well ensconced mechanism widely used in the fields of business and law -- could be used in a variety of ways. In addition to studying and examining the complexities of the individual case under inquiry, alternative scenarios and different offshoots of a particular case could be simulated with students playing the part of the various actors in the case. In so doing, both the faculty and the other students could evaluate the decisionmaking capacilities of the student/actors and compare outcomes. The prevailing notion among some professional educators particularly in law and business is to focus on what is referred to as the "best case studies." The rationale here is that students can

benefit most from understanding and acquiring a sense for what combination of factors will result in a "good case." But what about learning from those cases which are not the classics but which probably reflect more accurately the course of action that most new lawyers or managers would pursue? Then the students could adapt the course of action according to what they perceive the "best way" would be to proceed. A comparison of student performance with that of the established professional would in and of itself provide a means of assessment for the entire class as well as the particular students involved.

Simulation, role playing and group discussion are also part of many existing professional curricula, but these too are not utilized effectively in terms of assessment. This could be easily incorporated into daily instruction without any disruption of regular practices. Educators need to look beyond the campus for ideas. The American Management Association, for example, has developed a highly innovative assessment process using all three pedagogic methods. As mentioned earlier in this paper, the AMA has developed a masters' level curriculum. Its components are competencies identified on the basis of an "experimentally validated model of managerial experience." The assessment process has a dual focus: audit and feedback. The audit process involves

(a) four interactive exercises with simulated re-creations of varied managerial situations,

(b) a "Behavioral Event Interview", which involves an in-depth self study and report of one's behavior in a real management environment, and

(c) a series of respondent tests.

In addition, video-taped exercises and an audio-taped interview are assessed by being analyzed and coded in terms of the basic competencies on which the program is based. The

results are shared with the participants during the feedback process. The essential components of the audit and feedback activities include a competency profile which is based on input from tests, coding data, questionnaire results and data from peers and faculty. In addition, each student receives a "Development Plan", which is a blueprint for action to fill the gaps in knowledge and skills identified in the audit, as well as a "Back Home Simulation" which allows participants to apply what they have earned in simulated workplace situations.

This general approach is not tied to the particular group of competencies which form the basis of the AMA program. A combination of audit and feedback based on simulation, role playing and group discussions can be used in a wide variety of professional programs. What is applicable for future business leaders is also relevant for lawyers, engineers and professionals in the health and human service fields.

In all of these and many other professional curricula, small group interactions provide abundant opportunities for assessment. It is well known from organization theory that small group dynamics offer unique insights into understanding individual behavior. This lends itself well to assessment. Small groups can be organized at the beginning of a course and last for the entire semester, with each student maintiaining membership in the same group. This makes it possible for the students to work through problems and tasks that require the cooperation and assistance of other individuals just as in the workplace. Regardless of the profession, individuals have to rely on and work with others in order to bring about their own goals. The rationale of the AMA, as expressed by Edward Powers in a recent article in the Organizational Behavior Teaching Journal, is that "management involves getting things done through and with other people."

Role playing is another pedagogic method which can be used effectively as a means of assessment. The success of this can be enhanced when faculty join in the exercise. Students and faculty, in particular situations, can switch roles. Students can, for example, become the managers who must carry out certain tasks. Other students as well as the professor can play other designated characters. The situation may involve the student/manager on a 1:1 basis with another worker --someone of either greater or less authority -- or it could involve a problem solving enterprise. The various scenarios would be videotaped, replayed and the experiences analyzed by all. In this context, the faculty serve as mentors, trainers and facilitators. (Ibid.)

In most cases, assessment of students in real or simulated clinical experiences can be improved by including established practitioners in the field in the evaluation process. They have first hand knowledge of what competencies are required to do the job and moreover, they can best relate what it is that as employer or colleague they would expect from the future professional.

The Importance of Self-Assessment

The previous section has stressed the importance of incorporating effective assessment into clinical experiences, simulations, role playing, group exercises and other process-oriented curricular components. By itself this would constitute a major improvement in professional education. There is a further advantage. As was mentioned in the description of the AMA assessment process, feedback and self-assessment can be easily included as an integral part of professional education, not a discrete function that

operates in isolation from other activities. To do this is important because the process of professional practice can no longer be one-dimensional. There is no straight path from a well specified problem to a unique solution. Rather, as Schon has pointed out so clearly in The Reflective Practitioner, the effective professional engages in a continuous process of trial and error, with ongoing feedback that provides guidelines for improving the quality of one's actions. This involves exploring the implications of the problem, defining it and moving toward an optimal resolution. Schon describes the process of reflection-in-action as follows:

> "When someone reflects-in- action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case. His inquiry is not limited to a deliberation about means which depends on prior agreement about ends. He does not keep means and ends separate, but defines them interactively as he frames a problematic situation. He does not separate thinking from doing, ratiocinating his way to a decision which he must later convert to action. Because his experimenting is a kind of action, implementation is built into his inquiry. Thus reflection-in-action can proceed, even in situations of uncertainty and uniqueness, because it is not bound by the dichotomies of Technical Rationality."

If effective professional practice is itself a feedback process of reflecting on practice, then it inherently includes an ongoing self-assessment component. The same must then be true of professional education, which must incorporate a similar use of self-assessment of performance with feedback to indicate areas of further developmental needs.

Self-assessment is not an altogether new phenomenon in higher education. It has become a hallmark of the undergraduate experience at several institutions including the well-known Alverno College and the College of Public and Community Service (CPCS) at the University of Massachusetts

at Boston. At CPCS, where the age of the average student is almost 30 years, self-assessment is considered as much of a process as it is a program. "It is," according to the Assessment Manual of that institution, " a way of thinking about yourself which develops as you systematically think through what you know and want to know: how you have learned in the past and the best way for you to learn as an adult." Much of the value of self-assessment, if done effectively, is that it increases a student's awareness of what he/she is learning, and more importantly, the relationship of that knowledge and skills to future tasks. When a student asks himself, "What have I done, and how did I respond;" he is creating both cognitive and affective relationships that ultimately make his actions more reflective and less rote. Self-assessment encourages individuals to think about the normative ramifications of their decisions and to apply what they have learned from one experience to another. Moreover, self-assessment is especially important in professional fields becauses it helps individuals to recognize the special nature of their position vis-a-vis the client.

Medical education is not often considered to be a forerunner of innovation. Yet, several medical schools have begun making significant strides in modernizing medical education. Recent innovations at the Harvard Medical School in particular may represent a watershed in the constructive use of assessment in professional education. Harvard's Oliver Wendell Holmes Society New Pathway Project in General Medical Education is designed to address the critical needs and pressures of medical educators and students. Evaluation is a critical component of the New Pathway Program that has recently selected twenty-four students at random for its first class (1985-86).

Like many other aspects of the program, the evaluation component is very much an interactive process. As part of it

- a faculty advisory network will closely monitor student progress and will provide regular feedback to student and his preceptor,
- most evaluation will be "open book," personal, frequent, and informal,
- the preceptor will provide ongoing appraisal of the students' interpersonal, attitudinal and skill development,
- a list of "guiding questions," with accompanying references and support materials will direct the student to the key principles, concepts and learning issues in each unit of the curriculum. Students will be evaluated for their general knowledge, problem-solving, and clinical reasoning abilities by their responses to a selected set of these "guiding questions."
- mastery of essential knowledge will be appraised by means of self-directed testing, and clinical competency will be tested using programmed patients, which allow cross-student comparisons and assessment of a single student's development over time.
- overall evaluation of the student will be competency-based. Students will be requested to respond satisfactorily to a randomly selected, statistically significant sample of the total set of guiding questions.

- students in the New Pathway will be compared with those pursuing the standard curriculum on such factors as:
  - -- knowledge of basic science and scientific method,
  - -- clinical problem solving ability,
  - -- modes of self-learning and self assessment,
  - -- professional attitudes,
  - -- adaptive strategies for coping with stress.
- participant observation techniques used to study individual activity and group process,
- diaries of time expenditure and critical incidents will be used to sample student behavior,
- periodic interviews with students in both groups conducted to study the evolution of their concepts of competence and caring.

A useful description of these innovations is contained in an article "A New Pathway for General Medical Education," which appeared recently in the Harvard Medical Alumni Bulletin.

What makes the Harvard process of assessment so remarkable, in terms of the history of medical student education, is the degree to which it reflects a new gestalt in educating -- and evaluating -- the medical student. Traditionally,

evalution of a medical student's progress has been a formal, well-defined process aimed at measuring a predetermined set of outcomes primarily through written and oral examinations. There was little, if any, emphasis on attitudinal and behavioral factors or on assessing performance and progress through interpersonal communications. Much of the "new wave" orientation within the New Pathway Project is not unique to Harvard. Similar innovations are taking place at the medical schools of McMaster, Brown and Southern Illinois Universities. Much of the " new wave" approaches in medical student education is, as the recent AAMC Report, Physicians for the Twenty-First Century explains, an attempt to come to grips with training doctors who are prepared to cope with the changing non-medical -- i.e., social, psychological, emotional -- pressures and needs, as well as medical issues that have emerged in the last decade.

We thus see that medical educators are beginning to acknowledge the importance of shifting emphasis from an "information-intensive" approach to one that stresses how crucial it is to provide students with the necessary competence to apply a cognitive and analytical knowledge base to practical health care situations. An underlying assumption here is that as medical students are increasingly taught and assessed in terms of methods that encourage them to become active participants in their own intellectual growth, they will be sensitized to the critical importance of human relationships. The similarities between effective practice in a broad range of professions far exceed the differences. What is valid, and necessary, for medical competence is largely applicable, as well, to professional practice in management, in engineering, in law and in many other fields. The kinds of innovations in assessment and self-assessment pioneered at this time in a few medical schools should find their way, with appropriate

modifications, into other career oriented curricula as well. Given the number as well as the proportion of our undergraduates enrolled in professional programs, this issue should receive as much attention as that of assessment in the liberal arts.